

What is claimed is:

1 1. A method of forming a semiconductor device comprising:
 2 forming a first patterned conductive layer on a dielectric material on a substrate;
 3 forming a first barrier layer on the surface of the first patterned conductive
 4 layer;
 5 forming a second barrier layer on the surface of the first barrier layer; and
 6 forming a dielectric layer on the surface of the second barrier layer.

1 2. The method of claim 1 further comprising forming any one of a via, and a
 2 trench through a first portion of the dielectric layer.

1 3. The method of claim 2 further comprising forming a trench through a second
 2 portion of the dielectric layer if the via is formed through the first portion of the
 3 dielectric layer.

1 4. The method of claim 3, wherein the via is filled with a sacrificial light
 2 absorbing material comprising at least one of a dyed spin-on polymer and a dyed spin-
 3 on glass with dry etch properties similar to the dielectric layer.

1 5. The method of claim 2 further comprising forming a via through a second
 2 portion of the dielectric layer if the trench is formed through the first portion of the
 3 dielectric layer.

1 6. The method of claim 3 further comprising forming the via through the second
 2 barrier layer followed by forming the via through the first barrier layer.

1 7. The method of claim 6 wherein the via is formed through the first and the
2 second barrier layer with a single etch pass.

1 8. The method of claim 1 wherein the first barrier layer comprises less than 20
2 nanometers of silicon nitride.

1 9. The method of claim 8 wherein the first barrier layer comprises between 1
2 nanometer and 7 nanometer of silicon nitride.

1 10. The method of claim 1 wherein the second barrier layer comprises less than 200
2 nanometers of silicon carbide.

1 11. The method of claim 8 wherein the silicon nitride is deposited using any one of
2 a plasma enhanced chemical vapor deposition process, a chemical vapor deposition
3 process and an atomic layer deposition process.

1 12. The method of claim 10 wherein the silicon carbide is deposited using any one
2 of a plasma enhanced chemical vapor deposition process, a chemical vapor deposition
3 process and an atomic layer deposition process.

1 13. A method of forming a semiconductor device comprising:
2 forming a first patterned conductive layer on a dielectric material on a substrate;
3 forming a first barrier layer comprising silicon nitride on the surface of the first
4 conductive layer;

5 forming a second barrier layer comprising silicon carbide on the surface of the
6 first barrier layer; and
7 forming a dielectric layer on the surface of the second barrier layer.

1 14. The method of claim 13 further comprising forming any one of a via, and a
2 trench through a first portion of the dielectric layer.

1 15. The method of claim 14 further comprising forming a trench through a second
2 portion of the dielectric layer if the via is formed through the first portion of the
3 dielectric layer.

1 16. The method of claim 15, wherein the via is filled with a sacrificial light
2 absorbing material comprising at least one of a dyed spin-on polymer and a dyed spin-
3 on glass with dry etch properties similar to the dielectric layer.

1 17. The method of claim 15 further comprising forming a via through a second
2 portion of the dielectric layer if the trench is formed through the first portion of the
3 dielectric layer.

1 18. The method of claim 14 wherein the via is formed through the first and the
2 second barrier layer with a single etch pass.

1 19. The method of claim 13 wherein the first barrier layer comprising silicon nitride
2 comprises between 1 nanometer and 7 nanometer of silicon nitride.

1 20. The method of claim 13 wherein the second barrier layer comprising silicon
2 carbide comprises less than 200 nanometers of silicon carbide.

1 21. The method of claim 13 wherein the silicon nitride and the silicon carbide is
2 deposited using any one of a plasma enhanced chemical vapor deposition process, a
3 chemical vapor deposition process and an atomic layer deposition process.

1 22. A method of forming a semiconductor device comprising:
2 forming a first patterned conductive layer on a dielectric material on a substrate;
3 forming a first barrier layer comprising silicon nitride on the surface of the first
4 patterned conductive layer;
5 forming a second barrier layer on the surface of the first barrier layer; and
6 forming a dielectric layer on the surface of the second barrier layer.

1 23. The method of claim 22 further comprising forming any one of a via, and a
2 trench through a first portion of the dielectric layer.

1 24. The method of claim 23 further comprising forming a trench through a second
2 portion of the dielectric layer if the via is formed through the first portion of the
3 dielectric layer.

1 25. The method of claim 24, wherein the via is filled with a sacrificial light
2 absorbing material comprising at least one of a dyed spin-on polymer and a dyed spin-
3 on glass with dry etch properties similar to the dielectric layer.

1 26. The method of claim 24 further comprising forming a via through a second
2 portion of the dielectric layer if the trench is formed through the first portion of the
3 dielectric layer.

1 27. The method of claim 24 further comprising forming the via through the second
2 barrier layer followed by forming the via through the first barrier layer.

1 28. The method of claim 27 wherein the via is formed through the first and the
2 second barrier layer with a single etch pass.

1 29. The method of claim 22 wherein the first barrier layer comprises between 1
2 nanometer and 7 nanometer of silicon nitride.

1 30. The method of claim 22 wherein the second barrier layer comprises less than
2 200 nanometers of silicon carbide.